

**Abstract**

A method and apparatus is provided for controlling the optical output power from an optical amplifier arrangement. The arrangement includes a rare-earth doped fiber for imparting gain to an optical input signal propagating therethrough, a pump source for supplying pump power to the rare-earth doped fiber, and a tap for receiving a portion of the output power generated by the rare-earth doped fiber and converting it to a control signal. A controller is also provided for receiving the control signal and generating a bias current in response thereto for driving the pump source. The method begins by receiving an optical input signal that is being amplitude modulated at a prescribed frequency. The slew rate of the controller is adjusted so that the bias current drives the pump source to generate pump power that cannot vary at a rate greater than a slew-rate limit established by the controller. In this way resonance between the input signal and the frequency of the feedback control loop can be avoided.